



James P. Delton
Assistant State Engineer
(Acting)

ARIZONA DEPARTMENT OF TRANSPORTATION * MATERIALS GROUP

1221 NORTH 21ST AVENUE PHOENIX, ARIZONA 85009-3740 PHONE (602) 712 - 7231

POLICY AND PROCEDURE DIRECTIVE

TO: ALL MANUAL HOLDERS	PPD NO. 04-4
SUBJECT: CERTIFICATION AND ACCEPTANCE OF HYDRAULIC CEMENTS, FLY ASH, AND NATURAL POZZOLAN	EFFECTIVE DATE: January 30, 2004

1. GENERAL

1.1 This Policy and Procedure Directive supersedes P.P.D. No. 96-2.

1.2 This Policy and Procedure Directive outlines the procedures to be followed for certification and acceptance of hydraulic cements, fly ash, and natural pozzolan.

1.3 This Policy and Procedure Directive modifies the normal certification procedures. It shall be used in conjunction with the requirements of Subsection 106.05 of the Specifications.

2. DOMESTIC SOURCES

2.1 Acceptance of portland cement, fly ash, and natural pozzolan will be on the basis of the material originating from an Approved Material Source. However, the Department reserves the right to sample and test material for acceptance from any source without notification.

2.2 Source approval of portland cement plants, and fly ash or natural pozzolan producers/suppliers, will include the satisfactory submittal to Materials Group, Structural Materials Testing Section, on a monthly and timely basis, of an original Certificate of Compliance on the lots produced during that month. In addition, a copy of the Certificate of Analysis shall be supplied to Materials Group, Structural Materials Testing Section, for either: 1) each lot produced during that month, or 2) lots produced during that month that are used on any ADOT construction project. The referenced Certificate of Compliance and Certificate of Analysis are separate documents and not to be combined. Examples of typical Certificates of Compliance and Certificates of Analysis are given in the attachments to this Policy and Procedure Directive. Attachment #1 gives an example of a typical Certificate of Compliance for cement. Attachment #2 gives an example of a typical Certificate of Analysis for cement. Attachment #3 gives an example of a typical Certificate of Compliance for fly ash. Attachment #4 gives an example of a typical Certificate of Analysis for fly ash. Typical Certificates of Compliance and Certificates of Analysis for natural pozzolan would be similar to Certificates of Compliance and Certificates of Analysis for fly ash.

2.3 In addition to the certification requirements given above, a report shall be submitted to Materials Group, Structural Materials Testing Section, showing the statistics on the Chemical and Physical Requirements as given in ASTM C 150 for Portland cements, ASTM C 595 for blended hydraulic cements, and ASTM C 618 for natural pozzolan and Class F fly ash, whichever is appropriate. This report will be current and prepared for each source of material with a time interval of not more than one year.

2.4 A withdrawal of source approval may be instituted for any of the following reasons:

- (a) If the materials fails to comply with specification requirements.
- (b) If the material source fails to provide the required documents to the Department as specified for the source approval on a regular and timely basis.
- (c) If the source does not furnish material to the Department for a period of one year.


2.5 Commercial concrete producers or contractors that supply concrete to any ADOT construction project shall have the portland cement, fly ash, or natural pozzolan come from approved sources. In addition, commercial concrete producers or contractors shall advise the construction project in writing as a part of the mix design approval process as to the source and type of portland cement, fly ash, or natural pozzolan.

2.6 Current Approved Materials Source Lists for "Hydraulic Cements" and "Fly Ash and Natural Pozzolan" will be maintained by Materials Group, Structural Materials Testing Section. Attachments #5 and #6 show an example of the Approved Materials Source List for hydraulic cements. Attachment #7 shows an example of the Approved Materials Source List for fly ash and natural pozzolan. The Structural Materials Testing Section maintains a list of approved fly ash and natural pozzolan sources on the ADOT Materials Internet Site. Caution must be exercised in using the list of approved fly ash and natural pozzolan provided on the internet site due to delays that occur in updating this list. Attachments #8 and #9 show an example of the list of approved fly ash and natural pozzolan sources as shown on the internet site. Revisions to the Approved Materials Source Lists for "Hydraulic Cement" and "Fly Ash and Natural Pozzolan" are made by Materials Group, Structural Materials Testing Section, and distributed to the Regional Materials Engineers. Regional Materials Engineers, or the Structural Materials Testing Section, should be contacted to assure that the current list is being referenced.

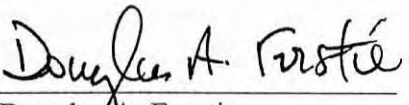
3. FOREIGN SOURCES

3.1 Acceptance of portland cement, fly ash, and natural pozzolan from foreign sources will be in accordance with the requirements specified above for domestic sources, with the additional requirement for sampling and testing given below.

3.2 One sample shall be taken weekly from a distributor's storage facilities. A partial test shall be conducted from a random selected sample each month and a complete chemical and physical test shall be performed every three months. A partial test shall include the tricalcium aluminate (C_3A) and alkalis determination plus the standard physical tests for portland cements. A failing test result will result in the removal from the of Approved Material Source List. This suspension from the list shall be until such time that the portland cement producer can demonstrate that the quality control has corrected the deficiency in the material and the product meets specification requirements.



James P. Delton
Assistant State Engineer (Acting)
Materials Group

Approved by: 

Douglas A. Forstie
Deputy State Engineer (Acting)
Highway Operations Group

Attachments (9)

January 30, 2004

P.P.D. No. 04-4 (Attachment #1)



ARIZONA PORTLAND CEMENT COMPANY

A Division of California Portland Cement Company

Manufacturers of Arizona Cements

P. O. Box 338

Rillito, Arizona 85654-0338

Tel: (520) 682-2221 Fax: (520) 682-4345

MANUFACTURER'S CERTIFICATION

Mr. Don Rushton, P.E.
ADOT/Materials Division
1221 N. 21st Avenue
Phoenix, AZ 85009

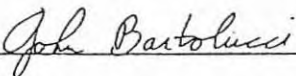
We hereby certify that the following Type I/II, Low Alkali, Portland Cement lots have been shipped from the Arizona Portland Cement Company, Rillito Cement Plant, Rillito Arizona. All Type I/II cement lots shipped from Rillito, Arizona and meet or exceed the current ASTM C-150 specifications for Low Alkali Cement.

Individual certifications can be obtained with each load upon request and delivered to your plant sites. These certifications will contain pertinent data including shipping lot number.

The Shipping Lot Numbers for the Month of JUNE 2003 are as follows:

15132	16132	17132
15231S	16232	17232
15332	16332	17532
15432	16432	17632
15532	16732	17732
15632	16832	17932
15732	16932	18132
15832	17032	18232

- Lot testing data from composite shipping sample



John A. Bartolucci
Quality Control Superintendent

File: Type II Data.doc

Date Signed: 11-Jul-03

RECEIVED
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MATERIALS
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ARIZONA PORTLAND CEMENT COMPANY

A Division of California Portland Cement Company

Manufacturers of Arizona Cements

P. O. Box 338

Rillito, Arizona 85654-0338

Tel: (520) 682-2221 Fax: (520) 682-4345

CERTIFICATE OF TEST

Arizona Portland Cement Type I/II Low Alkali

A.S.T.M. Designation: C 150

We certify that the test results below of the Low Alkali Cement produced and shipped from the Rillito Plant meet or exceed all current ASTM C-150 requirements and specifications. The following represents the monthly average chemical and physical data for the month of JUNE 2003.

CHEMICAL ANALYSIS (Oxides in %)		ASTM C-150 LIMITS	
Silicon Dioxide, SiO ₂	20.58	20.0	min. %
Alumina Oxide, Al ₂ O ₃	4.05	6.0	max. %
Ferric Oxide, Fe ₂ O ₃	3.45	6.0	max. %
Calcium Oxide, CaO	62.63	--	
Magnesium Oxide, MgO	4.75	6.0	max. %
Sulphur Trioxide, SO ₃	2.85	3.0	max. % (C3A _i less than 8.0)
Loss on ignition	1.01	3.0	max. %
Insoluble residue	0.46	0.75	max. %
Alkali Equivalent (%Na ₂ O+0.658% K ₂ O)	0.38	0.60	max. %
POTENTIAL COMPOSITION			
Tricalcium Silicate, 3CaO.SiO ₂ (C3S)	15	--	
Dicalcium Silicate, 2CaO.SiO ₂ (C2S)	13		
Tricalcium Aluminate, 3CaO.Al ₂ O ₃ (C3A)	5	8	max. %
Tetracalcium Aluminoferrite 4CaO.(AlFe) ₂ O ₃ (C4AF)	11		
PHYSICAL ANALYSIS			
Fineness, Blaine, Specific Surface (m ² /kg)	400	280	min. (m ² /kg)
Percent passing 325 mesh screen (45μm)	99.1	--	
Compressive Strength, C-109, p.s.i.			
3 day	3750	1450	min. psi
7 day	4980	2470	min. psi
28 day (May Data)	6470	--	
Autoclave expansion	0.28	0.80	max. %
False Set	90.4	50	min. % (optional)
Vicat time of setting: Initial (minutes)	131	45	min. (minutes)
Air Content of Mortar (volume %)	7.3	12	max. %
Water	26.5	--	

Remarks: Apparatus and methods in use in this laboratory have been checked by the National Institute of Standards and Technology. Major oxides are analyzed by X-ray Fluorescence Spectrometry.

John A. Bartolucci

John A. Bartolucci
Quality Control Superintendent

January 30, 2004

P.P.D. No. 04-4 (Attachment #3)

PHOENIX CEMENT

8800 E. CHAPARRAL ROAD, SUITE 155 • SCOTTSDALE, ARIZONA 85250-2606 • (480) 850-5757 • FAX: (480) 850-5758

July 2, 2003

Arizona Department of Transportation
Materials Division
ATTN: Don Rushton
1221 N. 21st Avenue
Phoenix, AZ 85009

This letter serves as certification that all Four Corners Fly Ash (pozzolan) sold by Phoenix Cement Company meets the requirements of ASTM Specification C618 for Class F Fly Ash (pozzolan).

<u>LOTS</u>		
5514	5515	5516
5517	5518	5519

Respectfully,

Lee Gorby
Lee Gorby
Quality Assurance Manager



PHOENIX CEMENT

8800 E. CHAPARRAL ROAD, SUITE 155 • SCOTTSDALE, ARIZONA 85250-2606 • (480) 850-5757 • FAX: (480) 850-5758

Arizona State Dept of Transportation
Attn: Don Rushton
1221 N 21 St Ave
Phoenix, AZ 85009-3740

Corporate Headquarters
8800 E Chaparral Rd, Ste 155
Scottsdale, AZ 85250
Phone: 480-850-5757
Fax: 480-850-5758

Cement Manufacturing
3000 W Cement Plant Rd
Clarkdale, AZ 86324
Phone: 928-634-2261
Fax: 928-634-3543

Product: Class F Fly Ash, 4 Corners Power Plant
ASTM C 618-00

Phoenix Transfer Facility
1941 W Lower Buckeye Rd
Phoenix, AZ 85009
Phone: 602-258-7798
Fax: 602-525-3362

21st Avenue Facility
1325 N 21st Avenue
Phoenix, AZ 85009
Phone: 602-254-3824
Fax: 602-254-3825

Mesa Community Storage
Dobson & McKellips
Mesa, AZ 85211
Phone: 480-990-7847

Cholla Fly Ash Facility
P O Box 380
Joseph City, AZ 86032
Phone: 928-288-1661
Fax: 928-288-1663

Four Corners Fly Ash Facility
P O Box 1007
Fruitland, NM 87416
Phone: 505-598-8657
Fax: 505-598-8633

San Juan Fly Ash Facility
San Juan Generating Station
Waterflow, NM 87421
Phone: 505-598-7546
Fax: 505-598-7547

Escalante Fly Ash Facility
CR19 / P O Box 620
Prewitt, NM 87405
Phone: 505-285-4590
Fax: 505-285-4667

Verde Gypsum
Camp Verde, AZ 86322
Phone: 928-567-3854

4-25-03 **FLY ASH TEST REPORT** Ctl#: 8119

Lot: 5514

X

Results

Specifications

Chemical Analysis

Silicon Dioxide, SiO ₂	61.93 %	---
Aluminum Oxide, Al ₂ O ₃	24.67 %	---
Ferric Oxide, Fe ₂ O ₃	4.21 %	---
SiO ₂ + Al ₂ O ₃ + Fe ₂ O ₃	90.81 %	70.00 Min
Calcium Oxide, CaO	0.00 %	---
Magnesium Oxide, MgO	0.00 %	---
Sulfur Trioxide, SO ₃	0.11 %	5.00 Max
Moisture Content	0.04 %	3.00 Max
Loss on Ignition	0.43 %	5.00 Max
Available Alkalis as Na ₂ O	0.51 %	1.50 Max
Sodium Oxide, Na ₂ O	2.28 %	---
Potassium Oxide, K ₂ O	0.99 %	---
R Factor	-0.46 %	---


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Physical Analysis

Fineness, amount retained on #325 sieve, %	17.70	34.00 Max
variation, points from average	0.69	5.00 Max
Density, g/cm ³	1.99	---
Variation from average, %	0.02	5.00 Max
Strength Activity Index with Portland Cement		
at 7 days, % of cement control	82.28	---
at 28 days, % of cement control	85.80	75.00 Min
Water Requirement		
% of cement control	95.87	105.00 Max
Soundness, autoclave expansion or contraction, %	-0.01	0.80 Max

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All tests have been made in strict accordance with the current standards of the American Society for Testing and Materials covering the type of material specified.


Lee Gorby, Quality Assurance Manager
01 JUL 2003



APPROVED MATERIALS SOURCES LIST

8/6/2003

HYDRAULIC CEMENTS

Brand and Type	Company and Address	Source
Arizona Type II low alkali Arizona Type III low alkali Arizona Type V low alkali	Arizona Portland Cement Co. 2400 N. Central Ave. Phoenix, AZ 85004 (602)271-0069	Rillito Plant (520)682-2221 Rillito, Arizona
Cementos Portland Nacionales: Type II low alkali Type V low alkali	Pacific Coast Cement 430 N. Vineyard Ave., Suite 500 Ontario, CA 91764 (909)390-7600	Hermosillo Plant Hermosillo, Sonora, Mexico
Colton Type II low alkali Type V low alkali	California Portland Cement P.O. Box 947 69 South Rancho Ave. Colton, CA 92324 (909)825-4269	Colton Plant Colton, California
Jiangnan-Onoda Cement Co. Type II low alkali Type V low alkali	CPC Terminals 401 Canal Avenue Wilmington, CA 90731 (310)835-5370	Nanjing Plant Nanjing, China
Lehigh Type II low alkali	Lehigh Southwest Cement 2002 E. McFadden, Suite 100 Santa Ana, CA 92705 (800)229-8771	Tehachapi Plant (805)822-4445 Monolith, California
Mitsubishi Type II low alkali Type III low alkali Type V low alkali	Mitsubishi Cement Corp. 5808 State Highway 18 Lucerne Valley, CA 92356-9691 (760)248-7373	Cushenbury Plant Lucerne Valley, California
Mojave Type II low alkali Type V low alkali	California Portland Cement Co. P.O. Box 910 9350 Oak Creek Road Mojave, CA 93502 (805)824-2401	Mojave Plant Mojave, California
Phoenix Type II low alkali Type III low alkali Type IP (MS)	Phoenix Cement Co. 8800 E. Chaparral Rd., Suite 155 Scottsdale, AZ 85250-2618 (480)850-5757	Clarkdale Plant Clarkdale, Arizona
Rio Grande Cement Type II low alkali	Rio Grande Portland Cement Corp. 4253 Montgomery NE #210 Albuquerque, NM 87109 (505)881-5303	Tijeras Plant Tijeras, New Mexico

APPROVED MATERIALS SOURCES LIST

8/6/2003

HYDRAULIC CEMENTS

Brand and Type	Company and Address	Source
Royal Type II low alkali Type V low alkali	Royal Cement Co. P.O. Box 380 Logandale, NV 89021 (702)398-3533	Logandale Plant Logandale, Nevada
TXI Riverside Cement Type II low alkali Type V low alkali	TXI Riverside Cement 19409 National Trails Hwy P. O. Box 158 Oro Grande, CA 92368 (760)245-5321	Oro Grande Plant Oro, Grande, California
TXI Riverside Cement Type II low alkali Type V low alkali	TXI Riverside Cement 1500 Rubidoux Blvd. Riverside, CA 92502 (909)683-3660	Crestmore Plant Riverside, California
Victor Brand Type II low alkali Type V low alkali	Cemex California Cement LLC 430 N. Vineyard Ave., Suite 500 Ontario, CA 91764 (909)974-5556	Victorville Plant Victorville, California

APPROVED MATERIALS SOURCES LISTFLY ASH AND NATURAL POZZOLAN

8/6/2003

Brand and Type	Company and Address	Source
Apache Class F Fly Ash	Boral Materials Technologies 7500 Dreamy Draw, Suite 234 Phoenix, AZ 85020 (602)861-5100	Arizona Electric Power Co-op Cochise, Arizona
Cholla Class F Fly Ash	Phoenix Cement Co. 8800 E. Chaparral Rd. Suite 155 Scottsdale, AZ 85250-2618 (480)850-5757	APS Power Plant Joseph City, Arizona
Coronado Class F Fly Ash	General Resource Technologies 120 Interstate North Parkway East Suite 440 Atlanta, GA 30339 (800)991-1666	Salt River Project St. Johns, Arizona
Escalante Class F Fly Ash	Phoenix Cement Co. 8800 E. Chaparral Rd. Suite 155 Scottsdale, AZ 85250-2618 (480)850-5757	Tri-State Generation Prewitt, New Mexico
Four Corners Class F Fly Ash	Phoenix Cement Co. 8800 E. Chaparral Rd. Suite 155 Scottsdale, AZ 85250-2618 (480)850-5757	APS Power Plant Fruitland, New Mexico
Mohave Class F Fly Ash	Boral Materials Technologies 7500 Dreamy Draw, Suite 234 Phoenix, AZ 85020 (602)861-5100	Southern California Edison Laughlin, Nevada
Navajo Class F Fly Ash	ISG Resources, Inc. P.O. Box 50490 Phoenix, AZ 85076-0490 (480)363-1247	Salt River Project Page, Arizona
Snowflake Class F Fly Ash	Boral Materials Technologies 7500 Dreamy Draw, Suite 234 Phoenix, AZ 85020 (602)861-5100	Stone Container Snowflake, Arizona



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Structural Materials Testing Section

Approved Fly Ash and Natural Pozzolan Sources

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Brand Name	Type	Company Name	Source
Apache Fly Ash	class F	Boral Materials Technologies Phoenix AZ.	Arizona Electric Power Co.
Cholla Fly Ash	Class F	Phoenix Cement Co.Scottsdale, AZ	APS Power Plant Joseph City, Arizona
Coronado Fly Ash	Class F	Mineral Resource Technologies	Salt River Project St. Johns, Arizona
Escalante Fly Ash	Class F	Phoenix Cement Co	Tri-State Generation Prewitt, New Mexico
Four Corners Fly Ash	Class F	Phoenix Cement Co	APS Power Plant Fruitland, New Mexico
Mohave Fly Ash	Class F	Boral Materials Technologies	Southern California Edison. Laughlin, Nevada
Navajo Fly Ash	Class F	ISG Resources, Inc.	Salt River Project Page, Arizona

Structural Materials Testing ~ Cures

Page 2 of 2

Snowflake Fly Ash	Class F	Boral Materials Technologies	Stone Container Snowflake, Arizona
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Last Updated 09/27/2002

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For Structural Materials Testing information or questions: structures@dot.state.az.us

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Please send *web related* comments or questions to: webmaster@dot.state.az.us

For general information or questions: info@dot.state.az.us

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Arizona Department of Transportation

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